South Carolina Department of Health
and Environmental Control

Quality Assurance Management Plan

For

S.C. DHEC

South Carolina Department of Health
And Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Office of Quality Assurance
Bureau of Environmental Services

Environmental Quality Control
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1.0 QUALITY ASSURANCE PROGRAM PLAN IDENTIFICATION FORM

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Plan Coverage: This plan covers all monitoring and measurement activities mandated through EPA regulations and memoranda. This includes all internal and external environmental data generated by activities conducted throughout the South Carolina Department of Health and Environmental Control. In addition, the plan ensures that environmental technology used for pollution control or waste remediation are designed, constructed, and operated according to defined specifications and protocols.

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QUALITY ASSURANCE MANAGEMENT PLAN

2.0 INTRODUCTION

The Quality Assurance Management Plan (QAMP) is a document that describes how programs within The South Carolina Department of Health and Environmental Control (SCDHEC - Agency) will plan, implement, and assess the quality of environmental work to be performed as part of the various programs' function within the Agency. The program areas involved are Air, Water, Land and Waste Management, Ocean and Coastal Resource Management, Environmental Services and the Underground Storage Tank Program. The QAMP is the "blueprint" that defines SCDHEC's QA policies and procedures; the criteria and areas of QA application; and the different QA-related roles, responsibilities, and authorities of personnel.

The U.S. EPA has developed a mandatory Agency-wide Quality System (or QA program) **Order 5360.1 A2**, that requires the State to assure that:

X environmental data collected are of appropriate type and quality for their intended use, and

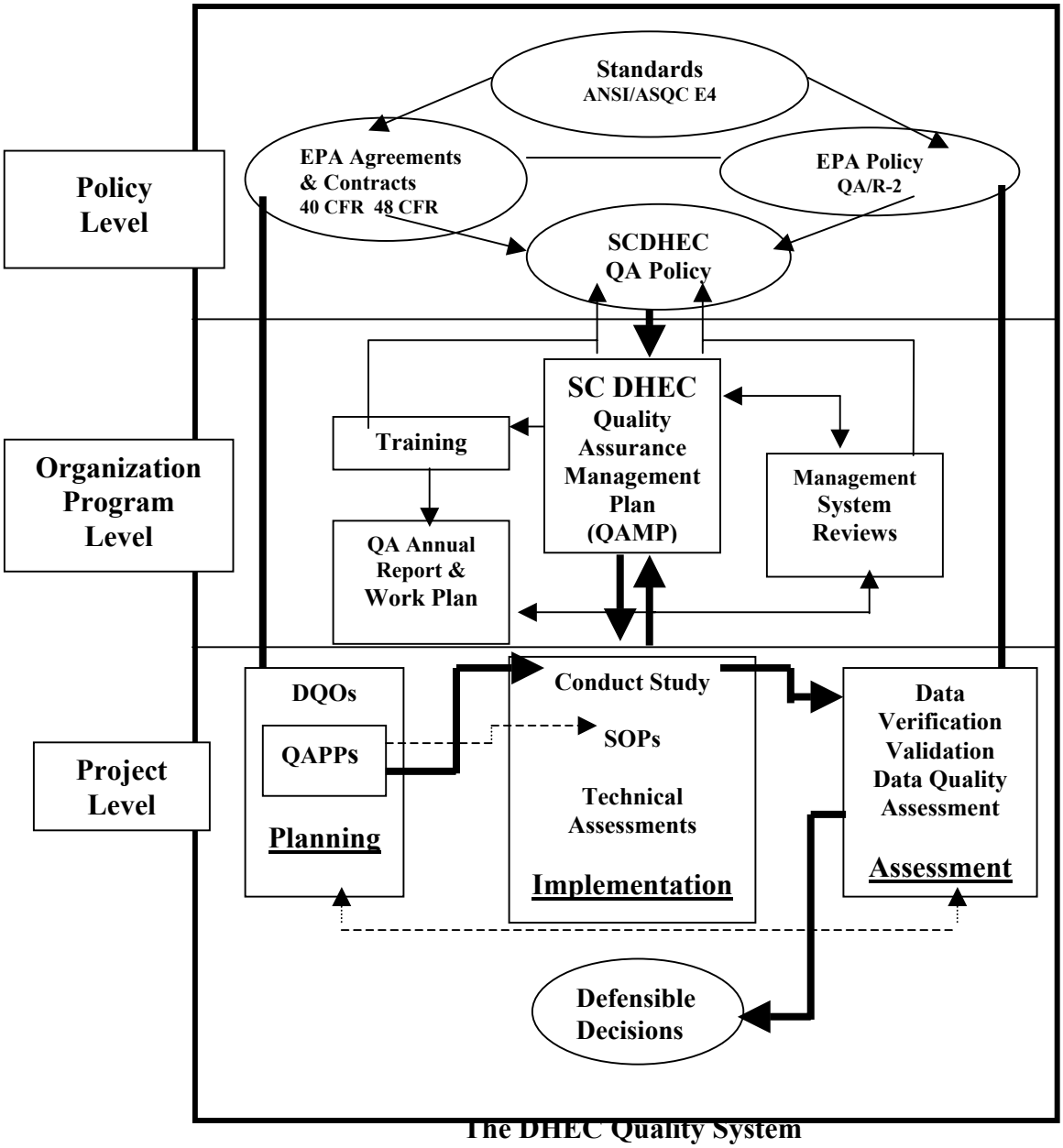
X environmental technology used for pollution control or waste remediation is designed, constructed, and operated according to defined specifications and protocols.

The quality assurance requirements for State/Tribal and local government financial assistance agreements are covered in 40 CFR Part 31.45 which states "*...the grantee shall develop and implement quality assurance practices consisting of policies, procedures, specifications, standards, and documentation sufficient to produce data of quality adequate to meet project objectives and minimize loss of data due to out-of-control conditions or malfunctions*."

SCDHEC's Quality System is the means by which the Agency implements the quality management process. The Quality System (Figure 1) encompasses a variety of technical and administrative elements which are contained in the QAMP, such as:

X organizational structure,
X policies and procedures,
X responsibilities,
X authorities,
X required documents, and
X guidance documents.

Figure 1



The DHEC Quality System

Environmental data are critical to decision-making concerning the protection of the public and the environment from the adverse effects of pollutants from natural and man-made sources. Those sources include industrial discharges and waste operations. Environmental data are key to decisions and actions pertaining to environmental protection efforts in the air, land, and all water bodies. The success of environmental technology in abating pollution or remediating waste sites depends upon the design of technology - its construction and

operation. Quality assurance (the documentation of QC) and quality control practices are needed to ensure that data involving all environmental efforts - pollution abatement, cleanup, public health protection, and environmental technology - successfully perform their intended role.

3.0 ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES OF UNITS

Charts depicting the Agency's organizational structure and diagrams of program areas covered in this document are included in the Appendix. Functions of each program area are listed below. The quality assurance responsibilities of each bureau include the preparation of QA Project Plans for special studies and generic plans for all routine activities; the monitoring and overview of external environmental programs; and the preparation, review, and revision of Standard Operating Procedures such as the SOP for sampling, entitled Environmental Quality Control Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, 2001.

Environmental Quality Control

The Deputy Commissioner for Environmental Quality Control (EQC) oversees programs for the Bureaus of Air Quality, Environmental Services (District and Laboratory), Water, and Land and Waste Management. The scope of this document includes the Office of Ocean and Coastal Resource Management which is organizationally located as a separate deputyship within SCDHEC.

Bureau of Air (BAQ)

Responsible for the implementation of the S.C. Pollution Control Act and the U. S. Clean Air Act for the purpose of maintaining standards and improving the air quality in South Carolina. Maintains the State Air Quality Implementation Plan to conform to state and federal mandates. Activities include air quality monitoring, analysis, and reporting; compliance inspections of emission sources; enforcement actions taken to attain compliance with emission standards and permit requirements; licensing and oversight of asbestos removal projects, contractors and workers; permit issuance for emission sources; testing and evaluation of emissions from stacks; modeling of emissions prior to construction to ensure compliance with national air quality standards; accidental release prevention; and emission inventory.

Bureau of Water (BOW)

Responsible for assuring that public drinking water supplies are safe. Ensures that public swimming pools and natural swimming areas are clean and safe; restores and maintains the chemical, physical, and biological integrity of the State's waters to the degree that these water resources may be used to the maximum extent possible. Activities involve the review of plans and/or permit issuance for the construction, and discharge of all proposed water, wastewater, stormwater, and agricultural wastewater systems; inspection of such facilities

under construction and in operation; reviews applications for permits to construct/repair/alter/remove any dam regulated under the S.C. Dams and Reservoirs Safety Act, and conducts on-going inspection program for these dams; conducts routine monitoring for bacteriological, organic and inorganic chemical and radiological contamination; conducts biological assessments of natural waters of the State; coordinates activities to prevent the contamination of existing and potential underground sources of drinking water and improves the quality where health or environmental impact exists; establishes specific classifications for all streams and tributaries throughout the State and effluent standards and guidelines for wastewater discharges; develops and promulgates rules and regulations for pollution abatement and for public health regarding sanitation, processing and handling of shellfish, fish, crab meat, lobster and shrimp; initiates enforcement actions to abate any violations including assessment of appropriate civil penalties with reference to the State Safe Drinking Water Act, the State Primary Drinking Water Regulations, the S. C. Pollution Control Act, and the Water Pollution Control Permits Regulation.

Bureau of Land and Waste Management (BLWM)

Responsible for ensuring the regulated management of all solid and hazardous waste in the State so as to protect the health and safety of the public and the environment. Activities include regulation, storage, transportation, treatment and disposal of hazardous waste to assure the safe and adequate management of these wastes; maintains a fund to ensure financing for contingencies (including appropriate staff oversight of clean-up activities) arising from hazardous waste spills or accidents at permitted facilities or at pre-existing abandoned sites; maintains reasonable enforcement standards to abate control and prevent pollution; regulates the methods of disposition of garbage and any like refuse matter; administering and implementing the requirements of the S.C. Mining Act which involves permitting all mining activities to ensure the environmental protection, public safety and reclamation of all lands and waters involved in mining within the State; enforcement actions, inspections, and permitting; promotes voluntary waste reduction through source reduction and recycling of industrial wastes; radioactive waste management; provide technical assistance to the emergency preparedness division and the Governor in case of radiological emergencies; sound use and protection of groundwater; waste assessment; and emergency response and supervision of clean-up activities. The Underground Storage Tank Program. is responsible for statewide compliance and corrective action programs related to underground storage tanks. The responsibilities are outlined in the State Underground Petroleum Environmental Response Bank (SUPERB) Act and Regulations 61-92 and 61-98. Specific compliance related services include: review and issuance of underground storage tank permit applications to install and operate; verification of tank owner's financial responsibility for corrective action and third party liability; maintenance of up to date information for all tank systems state wide; annual registration fee collection and decal issuance; oversight of installations, system upgrades, and abandonments; geotechnical services; and statewide inspection and outreach efforts.

Ocean and Coastal Resource Management (OCRM)

Responsible for protecting the quality of the coastal environment and to promote the economic and social improvement of the coastal zone for all the people of the State. Activities include the promotion of economic and social improvement of the citizens of the State through the development of coastal resources; to protect and enhance the resources of the State's coastal zone for current and succeeding generations; to formulate a comprehensive tidelands protection program; to implement a comprehensive beach erosion and protection policy including the protection of necessary sand dunes; and to encourage state agencies, counties, municipalities, and regional agencies to exercise their responsibilities and powers in the coastal zone through the development and implementation of comprehensive programs to assure the wise use of coastal resources while giving full consideration to ecological, cultural, and historic values as well as to the needs for economic and social development and resource conservation.

Bureau of Environmental Services (BES)

This Bureau consists of District Services and EQC Laboratories.

District Services

Implements the various Environmental Quality Control Programs (Air, Water, and Land/Waste Management) throughout the State. Activities include inspection and sampling of drinking water systems; inspection of hazardous waste generation, treatment and storage facilities; approval of water and wastewater systems for operation; ambient sampling of the State's waters and air; inspection and sampling of wastewater treatment systems, inspection of domestic landfill operations; inspection of industrial air pollution facilities; inspection of public swimming pools and bathing areas; inspection of construction sites for proper storm water and sediment control; sampling and classification of shellfish harvesting areas and inspection of processing facilities; response to oil or chemical spills or other environmental emergencies; investigation of complaints concerning the environment.

Environmental Quality Control Laboratories

Performs laboratory testing and analysis on environmental samples and specimens to determine if chemical and microbiological properties are consistent with quality standards, including ambient air and radiological environmental monitoring. The testing and analyses conducted complement and support all environmental quality control programs. EQC Labs also maintains responsibility for implementation of the ambient air monitoring program for the Bureau of Air Quality. EQC Laboratories direct and support activities in the regional laboratories in the following districts: Appalachia II, Catawba, Pee Dee, Low Country, Lower Savannah, Trident, and Waccamaw. Located organizationally within the EQC Labs is the Office of Environmental Laboratory Certification. This office has the responsibility for administering a laboratory certification program for all private, industrial, municipal, commercial, federal and state regional laboratories that produce data required by the

Department or will be officially submitted to the Department.

Bureau of Business Management (BBM)

Responsible for providing the Agency with supportive services in the following areas: procurement of goods and services; facility management; asset accounting and property management; central supply, mail and courier operations; motor vehicle management/ maintenance; facility maintenance; printing, photography and graphics; and security services. The Bureau maintains a continuous review of State and Federal Laws, policies and procedures to assist in the management process of the Department. The Bureau procures quality goods and services for all Agency entities as requested by the various Program (Bureau) area specifications in accordance with established rules and guidelines for procurement.

4.0 AGENCY MISSION AND QUALITY ASSURANCE POLICY

The S.C. DHEC serves the people as the authority, guardian and advocate in all matters relating to public health. The Department's definition of public health includes maintaining and promoting the full scope of environmental protection as well as personal health services that affect everyone's well being. The mission of the Agency is to promote and protect the health of the public and the environment.

SCDHEC QA Policy

It is the quality assurance policy of the Agency that there be sufficient QA activities conducted to demonstrate that all environmental data generated, processed, or used will be scientifically valid, legally defensible, and of known and acceptable precision and accuracy. It is also the Agency policy that documented precision and accuracy information be available upon request for all reported data. Data shall be complete, representative, and comparable. The quality of all data generated by and for SCDHEC shall meet or exceed all Agency and EPA program requirements.

Two basic tools for QA management are QA Project Plans (QAPPs) and Standard Operating Procedures (SOPs). This organization has one all-inclusive QA Management Plan covering all environmental monitoring activities and shall have Quality Assurance Project Plans including SOPs specific for each program area. Routine studies are implemented under a generic project plan, primarily SOPs, and special studies (some exclusions as explained in Section 5.0) require a written Quality Assurance Project Plan specific to that study.

5.0 ASSIGNMENT OF RESPONSIBILITIES

The Deputy Commissioner for Environmental Quality Control and OCRM has the overall

responsibility for the development, implementation, and continued operation of the Agency's Quality System. To ensure that the Agency's QA policy is uniformly applied to the generating and processing of all environmental data, a State Quality Assurance Management Office has been established. This office , also known as the Office of Quality Assurance, independent of the program offices it supports, shall be delegated the authority and responsibility for the Quality Assurance Program. The Assistant Bureau Chief for EQC Laboratories shall serve as the State Quality Assurance Management Officer (SQAMO).

Special studies involving an immediate public health threat or a criminal investigation may not have an approved Quality Assurance Project Plan (QAPP) due to a limited time frame for obtaining samples. These studies will be handled like routine work requiring adherence to applicable SOPs. Other special studies involving environmentally-related measurement activities conducted by or for EQC shall be performed with the approval of the State Quality Assurance Management Officer (SQAMO) or designee. Routine work such as, but not limited to, data reported in accordance with the National Pollutant Discharge Elimination System, shall be conducted in accordance with a standardized format and does not require pre-approval by the SQAMO or designee. Refer to Section 6.3 for a detailed list of regulations utilized for the routine compliance work done by or for the Department. The SQAMO or designee will ensure that:

X the level of needed data quality will be determined and stated before the generation effort begins.

X All environmental samples collected and data generated and processed will be of the quality and integrity specified by QAPPs.

To accomplish the above, each environmental monitoring organization shall develop and implement SOPs, approved by the SQAMO or designee, for all monitoring activities.

5.1 SQAMO

The SQAMO or designee shall:

X Be informed of each environmental monitoring study.

X Be provided with a written study plan for special studies for approval. This office shall maintain copies of the title page for each approved Plan.

X Identify and respond to QA needs, resolve problems, and answer requests for guidance and assistance.

X Assure that all Bureaus or Offices are made aware of any program or SOPs that affect their activities and responsibilities.

X Assure that all QA requirements are integrated into the overall State/EPA

Agreement Process.

- X Communicate and disseminate information to all Program areas, Bureau Quality Control Liaisons, Bureau Project Officers, Bureau Chiefs, Assistant Bureau Chiefs, and the Regional Quality Assurance Officer. Communicate with local Agencies'QA Officers and Industries'QA Officers.

- X Serve as the environmental monitoring clearinghouse in the preparation, implementation, and revision of all Quality Assurance Program Plans and SOPs. Review and approve all plans and SOPs.

- X Overview the QA of special environmental studies; however, the program area requesting the activity has a designee(s) directly responsible for ensuring that the data quality objectives are met.

- X And, attend quality assurance training courses, dependent upon funding.

5.2 Bureau Quality Control Liaison

Each program area with environmental monitoring responsibility shall designate a person as the Bureau Quality Control Liaison with the SQAMO and a Bureau Project Officer. The Bureau Quality Control Liaison will serve on a Quality Assurance Workgroup (alternate representative may be appointed by the Assistant Bureau Chief). The Bureau Quality Control Liaison shall:

- X Be the official Bureau contact for all QC matters pertinent to environmental monitoring activities of that Bureau.

- X Overview all QC activities within that Bureau and prepare reports as required by the SQAMO or designee.

- X Identify and respond to QA needs, resolve problems, and answer requests for guidance or assistance.

- X Work with the Bureau's staff to develop and maintain an acceptable QA program.

- X Work with The Office of Environmental Laboratory Certification to ensure that laboratories generating data have met all requirements of the certification process and to ensure consistency among laboratory reporting requirements, quality control practices, etc.

- X Establish a standardized data reporting format for the specific program areas

so that data packets are complete.

X Attend periodic meetings of the Quality Assurance Workgroup to keep abreast of QA issues affecting the Agency. Communicate QA issues to Bureau/Office personnel.

5.3 Bureau Project Officer

Each Bureau Project Officer is responsible for specific internal (see Section 6 for definition) environmental data collection projects, and is accountable for the management of the external (see Section 6 for definition) data collection projects. Therefore, the Project Officer has the principal responsibility for ensuring that project data quality objectives are met. Bureaus may have more than one Project Officer. Key responsibilities of the Project Officer are:

X Prepare and/or direct the preparation of QA Project Plans for special projects and submit the plans to SQAMO or designee for review and approval.

X Prepare and/or approve the Data Quality Objectives, specifications, and acceptance criteria for the projects.

X Overview data quality generated from external projects funded through financial assistance agreements as required.

X Participate in conducting QA system/performance audits of projects as requested by the SQAMO or designee.

X Take corrective actions that may be required by audit findings.

X Report data quality problems to the Bureau Quality Control Liaison.

X Attend QA training provided by the SQAMO or other external training as funding is available.

5.4 Bureau Technical Staff

Program Managers or designees are responsible for the daily implementation of the Quality Assurance Management Plan. This includes organizing and planning activities to meet quality requirements consistently; coordinating work performance for specific projects; and training personnel through SOPs. All program area technical staff will assist the SQAMO or designee in their area of expertise if requested. This will enhance the QA capability of this plan. The assistance may include, but not be limited to, the following:

- X Assist SQAMO or designee with technical aspects of QA as related to his/her expertise in air, water, chemical toxicity, toxic substances, hazardous waste, engineering, chemistry, biology, microbiology, field operations and data operations.

- X Identify QA needs, resolve problems, and answer requests for guidance or assistance in his/her specific area of expertise.

5.5 Office of Environmental Laboratory Certification

The Department maintains an Office of Environmental Laboratory Certification. The responsibility of the certification technical staff is to:

- X Conduct system audits at least every three years and performance audits annually of all compliance monitoring laboratories generating and submitting environmental data to the Agency. Provide quality assessments for laboratories generating data to the affected Project Officers and other interested parties. Assessments shall include information concerning accuracy, precision, completeness, representativeness, and comparability; standard operating procedures; results of system audits and performance audits.

- X Inform program areas of certification status of laboratories generating environmental data.

- X Ensure that performance audit samples are successfully completed and current for various parameters.

- X Participate in Quality Assurance Workgroup meetings.

5.6 Regional Quality Assurance Officer

The U.S. EPA Regional Quality Assurance Officer shall:

- X Provide technical assistance, training, and directives and communication to the SQAMO or designee.

- X Approve the State's Quality Assurance Management Plan.

- X Serve as the Laboratory Certification Officer for the State's central laboratory divisions. The State's microbiology, chemistry, air and the laboratory certification programs are reviewed at three year intervals by Region IV EPA Office's Quality Assurance Division associated with the

Science and Ecosystem Support Division in Athens, GA.

6.0 QUALITY ASSURANCE SYSTEM for INTERNAL AND EXTERNAL DATA

Data within DHEC fall into basically two categories: 1) internal data generated by the Department's laboratories, as well as data requested by the department through the contract process with private laboratories; and 2) external data generated under program grants, cooperative, and interagency agreements, and data generated by facilities, etc. that are mandated by regulation. Established criteria for planning, implementation and assessment is necessary in order for the Department to effectively conduct environmental data collection and environmental technology activities.

6.1 Internal Data

The steps outlined below are to be used for planning and implementing environmental projects requiring departmental or internal data collection. When this Agency enters a cooperative agreement with another agency, the lead agency will be responsible for generating the project study plan (unless otherwise agree upon). Elements as described below should be clearly outlined. Data quality objectives must be established to ensure the validity of the data collected. Though an external activity may not originate within this Agency, a QA Project Plan is necessary and should be completed in accordance with guidance documents and the Agency's QAMP.

Project Officers for the various programs will be responsible for preparing QA Project Plans for special projects in accordance with section 7.0 of this document. The SQAMO or designee will be available to assist in the development of these documents. The SQAMO or designee shall review and concur on plans for internal data generation prior to sample/data collection. Though it is unnecessary to review sample collection protocols each time internal samples are collected, the Agency's sampling plan is periodically reviewed to incorporate any updates approved by the SQAMO or designee. EQC's sampling manual is entitled Environmental Quality Control - Environmental Investigations Standard Operating Procedures and Quality Assurance Manual. Currently, this document is reviewed each fall and revisions incorporated and disseminated to staff the following January. The Office of Quality Assurance has established protocols to incorporate any urgent changes needed for immediate implementation.

Contract Labs and Interagency Agreements

Any laboratory producing data for a Program's utilization must have Standard Operating Procedures (see Section 7.3 for contents) in accordance with U.S. EPA, AWWA Standard Methods for the Examination of Water and Wastewater, and/or other approved methods. Quality Assurance must be clearly established. Project Mangers shall ensure all Requests for Proposals (RFPs) contain an acceptable description of QA requirements. A description of those requirements is included in the appendix. For contracts and interagency agreements,

before environmental measurements or data collection activities begin, SCDHEC and EPA, or other Federal and State Agencies must agree upon the QA requirements for the project.The laboratory organization, structure, areas of responsibility, must be available for review by the Program reviewing data. The organization must be certified by the State's Office of Environmental Laboratory Certification for all parameters where such certification exists. Any laboratory that sub-contracts to another lab must assure that the affected laboratory has the required certification. The Project Officer should state in the QAPP that a contracting lab must ensure the approved certification status of the sub-contracted lab. Upon completion of the project, the project manager shall assess the data quality of the environmental monitoring activity.

6.2 External Data

External activities fall under the same guidelines as internal activities. SOPs must be written and contain elements as described in Section 7.3 of this document. Any laboratory generating monitoring data, etc. that are reported to the department must have an established set of Quality Assurance guidelines in accordance with methodology. Routine data generated by facilities, etc. that are mandated by regulation must be certified or use certified laboratories. This includes any monitoring required by permits. SCDHEC may require Quality Assurance Project Plans for non-routine monitoring requested by a facility. The data received must be in a format determined by the Program area and must be of acceptable quality - scientifically valid, defensible, and of known and acceptable precision and accuracy

6.3 Federal and State Statutes and Regulations

Below is an extensive list by Bureau of Federal and State statutes and regulations that the Department adheres to for compliance monitoring and data collection activities:

6.3.1 BAQ

1. 40 CFR Parts 60 - 76
2. 40 CFR Parts 50, 53, and 58 (Ambient Monitoring)
3. Federal Clean Air Act (as amended, 1990)
4. S.C. Pollution Control Act (1976)
5. S.C. Reg. 61-62"Air Pollution Control Regulations and Standards"
6. Emergency Planning Community Right to Know Act
7 S.C. Reg. 61-86.1 "Standards of Performance for Asbestos Projects"
8. SC Code of Laws, Title 44, Chapter 87, Asbestos Abatement License
9. 40 CFR Part 93, Transportation Conformity
10. 40CFR Part 51, SIP Requirements

6.3.2 BOW

1. 40 CFR, Parts 141 and 142 Safe Drinking Water Act as amended 1996 (State Primary Drinking Water Regulations)
2. Federal Clean Water Act (1977)
3. State Pollution Control Act (1976)
4. Water Pollution Control Permits (R.61-9)
5. Water Classifications and Standards (R.61-68)
6. 40 CFR, Part 136 (1995)
7. Shellfish Sanitation Regulation, S.C. Reg.61.47 (1997)
8. Proper Closeout of Wastewater Treatment Facilities, S.C. Reg 61-82 (1979)
9. Underground Injection Control Regulation, S.C. Reg. 61-87
10. Groundwater Use Act
11. Public Swimming Pools, S.C.Reg. 61-51
12. Standards for Wastewater Facility Construction, S.C.Reg. 61-67
13. Dams and Reservoirs Safety Act, S.C. Reg. 72-1 through 72-9
14. Permits for Construction in Navigable Waters, S.C. Reg. 19-450
15. Water Quality Certification, S.C.Reg. 61-101
16. Standards for the Permitting of Agricultural Animal Facilities, S.C. Reg. 61-43
17. South Carolina Well Standards and Regulations, S.C. Reg. 61-71
18. Rules and Regulations Relating to Natural Public Swimming Areas, S.C. Reg. 61-50
19. Standards for Stormwater Management and Sediment Reduction S.C. Reg. 72-300 thru -316
20. Confined Swine Feeding Operations [47-20-10]
21. Crabmeat Sanitation Standards, S.C. Reg. 61-4922. Erosion and Sediment Reduction and Stormwater Management, S.C. Reg. 72-101
23. Standards for Stormwater Management and Sediment Reduction, S.C. Reg. 72-405
24. Capacity Use Declaration, S.C. Reg. 121-1
25. Capacity Use Declaration, S.C. Reg. 121.2
26. Water Use Reporting and Coordination, S.C. Reg. 121-10
27. Interbasin Transfer of Water, S.C. Reg. 12 1.12
28. S.C. Consolidated Procurement Code and Regulations, S.C. Reg. 11-35
29. State Procurement Regulations, S.C. Reg. 19-445.2000 thru 19-446.1000

6.3.3 BLWM

1. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986;
2. The Solid Waste Disposal Act as Amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA); the Safe Drinking Water Act Amendments of 1986; and SARA of 1986;
3. 40 CFR Parts 260-270 Resource Conservation and Recovery Act (RCRA)

4. S.C. Hazardous Waste Management Act (S.C. Code Ann. 44-56)
5. S.C. Oil and Gas Exploration, Drilling, Transportation and Production Act (S.C. Code Ann. 48-43)
6. S.C. Mining Act (S.C. Code Ann. 48-20)
7. S.C. Mining Act Regulations (R.89-10 thru 350)
8. S.C. Hazardous Waste Management Regulations (R.69-79)
9. S.C. Solid Waste Policy and Management Act (S.C. Code Ann. 44-96)
10. S.C. Solid Waste Management Regulations (R.61-107, et al)
11. S.C. Oil and Gas Exploration, Drilling, and Production Regulations (R.121-8)
12. Infectious Waste Management Act (S.C. Code Ann. 44-93)
13. Infectious Waste Management Regulations (R.61-105)
14. 40 CFR, Parts 280-281
15. S.C. UST Regulations (R.61-92, Part 280)
    Promulgated Pursuant to S.C. Code Ann. 44-2-50 (Supp. 1997)
16. State Underground Petroleum Environmental Response Bank Act
    S.C. Code Ann. 44-2-10 et seq. (Supp. 1997)
17. State Underground Petroleum Environmental Response Bank (SUPERB) Site Rehabilitation and Fund Access Regulations R. 61-98
    Promulgated Pursuant to S.C. Code Ann. 44-2-50 (Supp. 1997)

7.0 QUALITY ASSURANCE SYSTEM COMPONENTS

In order to conduct environmental data collection and environmental technology activities effectively, Program planning, implementation, and assessment of the activities is necessary. The steps described below are to be used for planning projects requiring data collection (internal data).

7.1 Data Quality Objectives

Data quality objectives (DQOs) are qualitative and quantitative statements of the quality of data needed to support specific decisions or regulatory actions. DQO's should include statements about the level of accuracy required for the project data by outlining Method Detection Limits (MDLs), Reporting Limits, and Limits of Quantization (LOQ), etc. Detailed guidance for developing DQOs is provided in Guidance For The DQO Process, EPA QA/G-4, August 2000.

Having identified the need for an environmental investigation, each Bureau's Project Officer is responsible for initiating the DQO development process. During the early planning phase of the investigation, the Bureau Project Officer must clearly establish the intended use of the data needed. The DQO process requires significant interaction between the project manager, field and laboratory technical staff, QA staff, and data users. The DQOs will be used for the detailed design of the investigation and preparation of the QA project plan. The SQAMO or designee will be the contact for providing guidance and review of DQO development. Tracking DQO development and implementation will occur as a part of the QA project plan review process.

Because many of the EPA methods have defined data collection activities and quality indicators specified in the method write-ups , it may not be necessary to proceed through all formal phases of the DQO process. Being familiar with the methodology and the data quality elements associated with them is necessary in order for those elements to be included in the project plan.

7.2 Quality Assurance Project Plans

QA project plans coupled with SOPs define specific project QA/QC requirements. This approach identifies the parameters to be measured and discusses the QA activities to be conducted during sampling, analysis, and data validation stages of the project. The document entitled EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5, Final, March 2001 provides detailed instructions for preparing QA project plans. The Office of Quality Assurance has published a Guidance Document For Preparing Quality Assurance Project Plans for Environmental Monitoring Projects/Studies, May 2000. The guide states SCDHEC Policy on QAPPs and includes some examples.

7.2.1 QAPP Preparation

The QAPP is the formal document describing in comprehensive detail the necessary QA/QC and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. The QAPP must provide sufficient detail to demonstrate that:

- the project technical and quality objectives (Data Quality Objectives) are identified and agreed upon;
- the intended measurements or data acquisition methods are appropriate for achieving project objectives;
- assessment procedures are sufficient for confirming that data of the type and quality needed and expected are obtained; and
- any limitations on the use of the data can be identified and documented.

In order to be effective, the QAPP must specify the level or degree of QA/QC needed for the particular environmental data operation. Because this will vary according to the purpose and type work being done, SCDHEC will evaluate QA/QC applied to a project commensurate with :

- purpose of the environmental data collection
- type of work to be done
- intended use of the data

Format

There are two basic formats to use in writing the Quality Assurance Project Plan. They are the Proposal Quality Assurance Plan (PQAP) and the more detailed QA Project Plan(QAPP). Depending on the level of detailed required, the decision to accept the less formal PQAP is left to the DHEC Project Officer and SQAMO/QA Officer.

7.2.2 The Proposal Quality Assurance Plan Document

The Proposal Quality Assurance Plan is a brief document that encompasses elements of the Quality Management Plan (QMP) and the QA Project Plan (QAPP) and presents these elements in a less formal format, including a narrative. The PQAP may be applied to small data collection projects, small grants for basic or exploratory research, community/student education, and similar work of limited scope and duration. The PQAP will suffice for all internal data collection projects in which the sampling and analyses are conducted by Department staff and laboratories.
The PQAP shall include or address:

- a project title sheet with signature and date of project officer

- a project description, including the purpose of the work, the data collection activities to be performed, and how the environmental data produced will be used;

- a statement of the project objectives, including the primary goals, expected level of confidence in the resulting data, and criteria for successful completion of the work;

- a description of the sampling and analytical design (experimental design) of the project, including identification of critical and non-critical aspects of the project, sampling and analytical methods to be used, calibration requirements for instruments (as appropriate), and relevant method performance criteria;

- a description of the process for the handling and custody of samples, including sample identification, preservation, transportation, storage, and final disposal;

- a listing of the proposed start and ending dates for the project with key milestones and interim deliverables, as appropriate, identified;

- a listing of key project staff and their roles and responsibilities

- a description of how quality will be assured during the project, including the use of performance evaluations, audits, surveillance, and other assessment procedures;

- procedures for data verification and validation (including any statistical analyses used), and how corrective actions will be implemented

- identify any needed reports on QA/QC activities

7.2.3 Quality Assurance Project Plan (QAPP) Document

The QAPP document is the most frequently used format and applies to most environmental data collection work. It will apply to contracts, interagency agreements, large cooperative agreements and grants, etc. that include post-award environmental monitoring, sampling, and analysis activities and long term studies. The QAPP must be composed of standardized, recognizable elements covering the entire project from planning, through implementation, to assessment.

Group A **<u>Project Management:</u>**

This group of elements covers the basic area of project management, including the project history and objectives, roles and responsibilities of the participants, etc. These elements ensure that the project has a defined goal, that the participants understand the goal and the

approach to be used, and that the planning outputs have been documented.

A1 Title and Approval Sheet
A2 Table of Contents
A3 Distribution List
A4 Project/Task Organization
A5 Problem Definition/Background
A6 Project/Task Description
A7 Data Quality Objectives and Criteria for Measurement Data
A8 Special Training Requirements/Certification
A9 Documentation and Records

Group B **Measurement/Data Acquisition:**

This group of QAPP elements covers all aspects of measurement systems design and implementation, ensuring that appropriate methods for sampling, data handling, and QC are employed and are documented.

B1 Sampling Process Design (Experimental Design)
B2 Sampling Methods Requirements
B3 Sample Handling and Custody Requirements
B4 Analytical Methods Requirements
B5 Quality Control Requirements
B6 Instrument/Equipment Testing, Inspection, Maintenance Requirements
B7 Instrument Calibration and Frequency
B8 Inspection/Acceptance Requirements for Supplies and Consumables
B9 Data Acquisition Requirements (Non-direct Measurements)
B10 Data Management

Group C **Assessment/Oversight**

This group of QAPP elements addresses the activities for assessing the effectiveness of the implementation of the project and associated QA/QC. The purpose of assessment is to ensure that the QAPP is implemented as prescribed.

C1 Assessments and Response Actions
C2 Reports to Management

Group D **Data Validation and Usability**

This group of QAPP elements covers the QA activities that occur after the data collection phase of the project is completed. Implementation of these elements determines whether or not the data conform to the specified criteria, thus satisfying the project objectives.

D1 Data Review, Validation, and Verification Requirements
D2 Validation and Verification Methods
D3 Reconciliation with User Requirements

The goal of this Quality Assurance Management Plan is to have an approved QA project plan prior to data collection. Until this Plan can be fully implemented, non-routine monitoring efforts (with the exception of situations involving immediate public health threats or criminal investigations) shall attempt to have an approved QA project plan prior to data collection. For routine work, an immediate public health threat, or criminal investigation, a generic document (SOPs) outlining acceptable methods for sampling and analysis will suffice.

All of the State's QAPPs and PQAPs must be approved by the SQAMO or designee prior to data collection. The SQAMO or designee shall review all plans, provide input, recommend changes, and approve final plans. Upon request, technical staff shall peer review plans with regard to their area of expertise. QA activities are to be tracked by the Program's Project Officer.

7.2.4 Approvals

None of the environmental data collection work addressed by the QAPP may be started until the initial QAPP has been approved by the DHEC Sponsoring Program and State Quality Assurance Management Officer (SQAMO) or designee. In some cases, DHEC may grant conditional or partial approval to permit some of the work to begin while noncritical deficiencies are being resolved. The QA Officer should be consulted to determine the nature of the work that may continue and the type of work that may be performed under a conditionally approved QAPP. The following approvals are granted:

• **Full Approval:** No remaining identified defiencies exist in the QAPP and the project may commence.

• **Partial Approval:** Some activities identified in the QAPP still contain critical deficiencies while other activities are acceptable. If the acceptable activities are not contingent upon the completion of the activities with deficiencies, a *partial approval* is granted for those activities to proceed. Work should continue to resolve the portions of the QAPP that are deficient.

• **Conditional Approval:** Approval of the QAPP or portions thereof will be granted upon agreement to implement specific conditions, specific language, etc. by parties required to approve the QAPP in order to expedite the initiation of field work. In most situations, the *conditional approval* is upgraded to final *approval* upon receipt, review, and sign off by all parties of the revised/additional QAPP pages.

Once approved, the organization performing the work is responsible for implementing the QAPP. This responsibility includes ensuring all personnel involved in the work have copies of or access to the approved QAPP along with all other necessary planning documents. Personnel should understand their responsibilities prior to the start of data generation activities.

Revisions:

Organizations are responsible for keeping the QAPP current when changes to technical aspects of the project change. QAPPs must be revised to incorporate such changes. **Any revisions or additions to the QAPP must be re-approved by SCDHEC Office of Quality Assurance and distributed to all participants in the project.**

7.3 Standard Operating Procedures (SOPs)

SOPs are composited into a document that describes how methods (EPA, Standard Methods, etc.) are to be routinely implemented. An SOP for sampling should contain sampling design and methodology, general site selection, sampling equipment and cleaning requirements, and safety issues. An analysis SOP generally contains such information as scope and application, method summary, safety procedures, interferences, sampling and storage, apparatus and materials, reagents and solvents, sample preparation and instrumental analysis protocols, calculations, analytical performance control requirements and documentation, and data reduction. SOPs should be written for each program area in accordance with associated regulations and by EQC's Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, 2001.

The manual containing SOPs for analytical methodology used by Department Laboratories must include the following general information:

X tables of organization.

X chain of custody procedures and a description of forms.

X types of sample containers to be used, preservation required, summary of holding times, and cleaning and preparation of containers.

X types of parameters requiring field or trip blanks.

X field notebooks, workbooks or paperwork used internally for tracking sample analysis.

X data control recording notes.

X significant figures.

X reporting requirements for analytical results.

X lower limits of detection.

X sample and data management which includes form design, filing and storage.

X laboratory services, instrumentation, and equipment which involves laboratory pure water, preventative maintenance in the lab and record keeping.

X glassware types, uses, and cleaning protocol.

X grades and quality of reagents, solvents, fuels, and compressed gases.

X analytical procedures for each method used. Procedures must include data reduction and validation criteria to minimize data transcription and interpretation errors.

X list of attachments included in the document.

7.3.1 Elements for Method SOP Formats Utilized by EQC Labs

All analytical SOPs will include the following elements in the order specified. A general description of content material for each element is included as guidance. If an element is non-applicable to that SOP, it should be stated in the SOP. Procedural steps must be numbered sequentially by subsection and step, (example 1.1, 1.2, 1.2.1, etc). All SOP pages must be identified at a minimum by (section number, month/year, and page. Formatting of page and page numbering is left to the discretion of the Lab Division. SOPs are reviewed by the Lab Director and QA Office prior to implementation.

Element	Contents
Title Page	SOP title, SOP number or designation, review date, signatures of Reviewer, Director, and QA Officer
1.0 Scope and Application	identify analyte(s), matrices, applicable concentration range, and applicable detection limits, etc.
2.0 Summary of Method	describe the analytical process and technology used.
3.0 Interferences	describe interferences and treatment to reduce them
4.0 Safety	include any safety precautions and warnings needed
5.0 Equipment and Supplies	instruments, apparatus, and materials required

6.0 Reagents and Standards	preparation guidelines for each, standardizations, specifics for use, etc.
7.0 Sample Collection, Preservation, and Storage	describe appropriate collection, preservation, and storage of sample, including holding times where relevant
8.0 Performance Criteria and Quality Assurance	include QC checks required, frequency, acceptance criteria, and corrective actions for out of control data
9.0 Calibration	describe calibration protocols for instruments
10.0 Procedure	list sequential steps for sample preparation and analysis
11.0 Calculations and Data Reporting	describe data acquisition, reduction and reporting
12.0 Waste Management	describe protocols for treatment of hazardous waste and proper disposal guidelines or appropriate SOP reference.
13.0 References	list method references
14.0 Tables, Diagrams, Flowcharts, etc.	attach as appropriate

7.3.2 Program SOPs

SOPs are to be prepared by the various Program (Bureau) areas as determined by the specific Program needs. SOPs are to be reviewed by appropriate senior staff in the user organization, the QA staff, and by technical specialists in the specific work area. They are dynamic documents requiring revisions as determined by regulation, changes in equipment or protocol. EPA QA/G-7, Guidance for the Preparation of Standard Operating Procedures, March 2001 provides details for preparing SOPs.

The objectives of SOPs are:

X to establish traceability of standards, reference materials, instrumentation, samples and environmental data.

X to train a user, with basic education and experience to properly use them.

X to establish consistency with sound scientific/engineering principles.

X to establish consistency with EPA regulations and guidelines.

X to establish consistency with the instrument manufacturer's specific instruction manuals.

All QA Programs and SOPs shall have a document control system to provide for periodic updating and to ensure that all affected personnel receive all revisions. Document control is described in the Quality Assurance Handbook For Air Pollution Measurements, EPA 600/0-

76-005, Section 1.4.1.

7.4 Data Processing and Verification

The Department utilizes both primary and secondary data. Primary data includes the internal and external data previously defined in Section 6.0. Secondary data includes environmental data from other sources such as literature, industry surveys, compilations from computerized data bases and information systems, and results from computerized or mathematical models of environmental processes and conditions. Data processing includes collection, validation, storage, transfer, and reduction. Precautions shall be taken each time the data are reduced, recorded, calculated, and transcribed to prevent the introduction of errors and the loss of information. Data processing requirements are as follows:

7.4.1 Collection -- Each SOP shall address the checks which must be used to avoid errors in the data collection process.

7.4.2 Validation -- Data validation is defined as "the process whereby data are filtered and accepted or rejected based on a set of criteria." Since this aspect of QA may include various forms of manual or computerized checks, criteria for data validation shall be specified in each SOP.

7.4.3 Storage -- Each SOP shall indicate how specific types of data will be stored, and the duration of the storage. This is determined in accordance with Agency and Federal guidelines. For each stage of data processing at which data are stored, procedures shall be established to ensure data integrity and security.

7.4.4 Transfers -- Each SOP shall describe procedures which shall be used to ensure that data transfer is error-free, and that no information is lost in the transfer. Data transfers shall be kept to a minimum.

7.4.5 Reduction -- Each SOP shall contain procedures for ensuring and verifying the correctness of data reduction processes. Data reduction includes all processes which change either the form of expression or quantity of items. It is distinct from data transfer in that it entails a reduction in the size of the data set. Each SOP must identify the processes used to obtain the reduced data set.

7.5 Data Quality Assessment

Each QA project plan shall include procedures for assessing the quality of all environmental data generated and processed for accuracy, precision, completeness, comparability, and

representativeness. Definitions are as follows:

- X Accuracy - the nearness of a measurement to its accepted true value as expressed in terms of error.

- X Precision - a measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions, expressed generally in terms of standard deviation.

- X Completeness - a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under correct, normal conditions.

- X Comparability - a measure of the confidence with which one data set can be compared to another.

- X Representativeness - a measure of the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

Detailed guidance for assessment may be found in Guidance for Data Quality Assessment, EPA QA/G-9, July 2000.

7.6 Corrective Action

Each QA Project Plan and SOP shall include provisions for written requirements establishing and maintaining QA reporting and feedback mechanisms to the appropriate Program personnel to ensure that early and effective corrective action can be taken when data quality falls outside established data quality objectives (acceptance criteria). Each QA Project Plan shall also include provisions to keep Assistant Bureau Chiefs and Program Managers informed of the performance of all data collection when corrective actions are necessary. Corrective action shall relate to the overall QA management scheme and shall specify who is responsible for implementing the corrective actions, who provides follow-up to ensure that actions have been taken, and that the actions have produced the desired results.

7.7 Information Management

The Division of Information Resource Management within The Office of Public Health Statistics and Information Systems (PHSIS) is responsible for The Agency planning and management of information resources including data processing services, computers and software, records management, communications coordination, computer applications development and technical support, data coordination, data entry, and data base administration. Personal computer platforms, local area networks and server platforms, Agency electronic mail, the mainframe platform, and the Laboratory Information

Management System (LIMS) must conform to guidelines established by this Office.

Hardware and Software packages are reviewed prior to purchase or upgrade via Peer Review (committees, etc.) to ensure that the items meet requirements of the specific work.

8.0 QUALITY ASSURANCE SYSTEM ASSESSMENT

An effective QA System requires periodic assessment of data quality through an audit process to establish a basis for corrective action. There are several types of audits. They are described in the next section.

8.1 Data Quality Assessment

Assessments are the principal means in this Agency's QA Program to determine compliance with the established SOPs and QA Study Plans. Detailed guidance for assessment may be found in Guidance for Data Quality Assessment, EPA QA/G-9, July 2000.

8.1.1 Performance Audits are quantitative audits of the ability of an analytical system to obtain reliable data. These audits involve submission of performance evaluation (PE) samples as unknowns to laboratories or other analytical systems. There are routine audits that are part of the national audit programs such as the Water Supply PE Studies, Water Pollution PE Studies, DMR QA Studies, Radiological PE Studies, etc. Under this program, the EPA issues standards for the operation of the program; the National Institute of Standards and Technology (NIST) develops standards for the private sector PE suppliers, evaluates, and accredits suppliers; and the private sector develops and manufactures PE materials and conducts the studies. The results are then made available to study participants and to the government organizations that have the responsibility for administering programs supported by the studies. The Department's EQC Laboratories and District Drinking Water, and Wastewater Field Staff currently participate in annual WS and WP PE Studies.

8.1.2 Technical System Audits, (TSAs) are internal and external on-site audits of environmental data gathering activities. The audits are qualitative assessments of personnel, equipment, facilities, procedures, and QA activities. Internal audits of the Central and Regional Laboratories are conducted annually by the Office of Quality Assurance. An external audit (also known as a performance audit inspection) of SC DHEC's Central Laboratory is conducted at three year intervals by the Region 4 US EPA Office of Quality Assurance. External audits of the Department's Regional Laboratories are conducted by the State's Office of Environmental Laboratory Certification personnel at three year intervals. Audits of laboratories that provide data to the State of South Carolina for internal and external activities (as defined in Section 6.0) are conducted by the State's Office of Environmental Laboratory Certification not to exceed three year intervals. System audits shall be conducted according to standard documents such as The Manual for the Certification of

Laboratories Analyzing Drinking Water, 4th Edition, March 1997, EPA 815-B-97-001.

8.1.3 Data quality audits are quantitative audits in which data are reviewed and evaluated following collection to determine the quality and useability of the data. This type of audit is done by the Office of Quality Assurance and/or the respective Bureau's Project Officer or personnel designated by the Project Officer to perform this duty who actually utilize the data. The data must be of acceptable quality as outlined in the Laboratory QA Manual and data quality objectives of the QA Project Plan.

8.1.4 System audits of all Programs requesting and generating internal data are performed as time permits.These audits are conducted by personnel from the Office of Quality Assurance or the respective Bureau's Project Officer or desinee. Copies of the systems audits are provided to the respective Bureau Chiefs, Assistant Bureau Chiefs, Directors, and Project Officers. The purpose of the audit is to determine how efficiently the Quality Assurance Project Plans are being implemented.

8.1.5 Assistant Bureau Chiefs or designees are required to assess (at least annually) the adequacy of the quality system. This assessment referred to as a Management System Review provides a means for determining and taking necessary response actions regarding:

- X effectiveness of the system of management controls that are established to achieve and assure quality, and

- X adequacy of resources and personnel provided to achieve quality objectives in all activities to which the Quality System applies.

8.1.6 Results of these various audits will be reported to the appropriate Bureau Chief, Assistant Bureau Chief, Division Director, Project Officer, etc., with recommendations for corrective action. Tracking of corrective action will be conducted in a number of ways (i.e, a mid-year review by the specific Program area, annual review to be reported to the SQAMO or designee and forwarded to the Regional Quality Assurance Officer, the scheduling of additional audits if necessary, or submitting additional PE samples).

9.0 COMMUNICATION/ QUALITY IMPROVEMENT/WORK PLAN

9.1 Communication

Effective communication is essential to assure the success of a quality system. S.C. DHEC is committed to maintaining open communication in all aspects of planning, implementing, and evaluating its environmental programs. This is accomplished by:

9.1.1 Exchange of information between the SQAMO or designee and Bureau Chiefs, Assistant Bureau Chiefs, Bureau Quality Control Liaisons, Project Officers, Program Managers, Technical Staff, and EPA/ Federal Staff and State Agencies/Departments.

9.1.2 Interaction of the Bureau Quality Control Liaisons as outlined in section 5.2.

9.1.3 Disseminating information through SOPS, guidance documents, directives, policies, and procedures.

9.1.4 Bureau and interdepartmental committees, teams, taskforces, and workgroups.

9.1.5 Program training, workshops, meetings, telecommunication, and electronic mail.

9.2 Quality Improvement

Identifying quality problems and improving performance are key components in our quality improvement efforts. The SQAMO or designee and Bureau QC Liaisons are responsible for responding to and resolving all quality assurance problems and needs, and oversight of improvement activities. To ensure a continuous quality system, the Agency:

9.2.1 Conducts routine internal and external audits of its program activities. (Section 8)

9.2.2 Initiates corrective actions to adverse conditions that compromise quality.

9.2.3 Promotes problem solving and process improvement activities/suggestions.

9.2.4 Encourages input and feedback throughout the planning, implementation, and evaluation processes by all staff and customers.

9.3 Annual Report/Work Plan

The QA plan shall be kept current and revised as necessary. The SQAMO or designee shall review annually the QA program to ensure consistency with the EPA QA Program guidelines and objectives. The QAMP is to be revised on a five year basis, at a minimum. The SQAMO or designee shall report QA implementation problems and progress to management and the Regional Quality Assurance Officer. By October 31 of each year, each environmental monitoring program shall submit a QA Report to the SQAMO or designee. By November 15 of each year, the SQAMO or designee shall submit a QA Report to the Regional Quality Assurance Officer. QA reports shall contain at a minimum the following information:

1. Status of QA Program.
2. Status of Standard Operating Procedures.
3. Data quality assessment to include:
   - 3.1 Internal assessments conducted
   - 3.2 External assessments conducted
4. QA Program resources
5. Results of performance audits.
6. Summary of QA-related training received and provided.
7. Significant QA problems, corrective actions, progress, plans, and recommendations.

10.0 TRAINING

Each Program area will ensure that all personnel performing tasks and functions related to data quality will have the needed education, training, and experience. Minimum personnel requirements are established by the Office of Personnel Services. Any special preferences are determined by the hiring authority. Ensuring that personnel requirements have been met is the responsibility of the hiring authority.

The State Quality Assurance Management Office shall be staffed by professional personnel having at a minimum the following qualifications:

1. They shall have sufficient professional and administrative authority to deal effectively with the program managers and project officers.

2. They shall have a knowledge gained through a combination of training and experience in a scientific discipline and shall have a knowledge of statistics.

3. They shall be knowledgeable of appropriate Federal Laws, EPA regulations and guidelines for environmental monitoring, and related EPA requirements.

4. They shall have good written and oral communication skills in meeting and dealing with the general public, private industry, and officials of Federal, State, and local agencies.

The SQAMO shall assess the training needs of all Quality Assurance Management Office staff members annually. Training shall include attendance at job-related and QA training courses, workshops, and professional meetings each year as funds allow. All training shall be documented and maintained in Bureau personnel files. Active membership in professional organizations is encouraged. The qualifications and training of personnel used by contracts, industry, etc. involved in environmental monitoring shall be evaluated through the systems and performance audits.

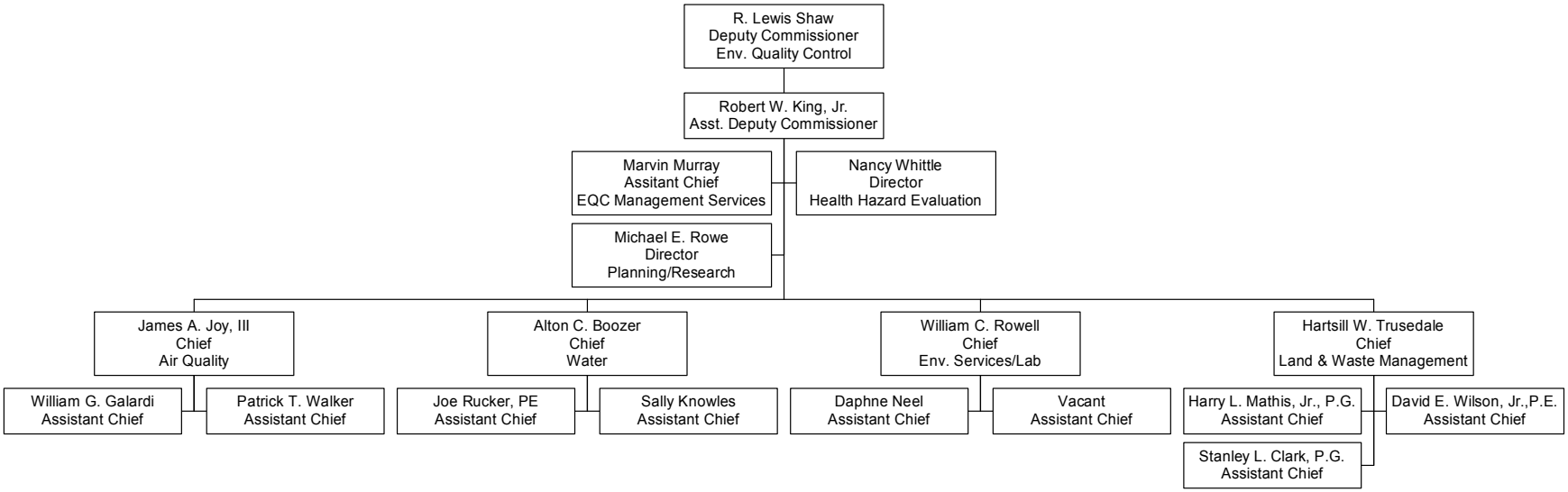
11.0 IMPLEMENTATION REQUIREMENTS AND SCHEDULE

Implementation of the Agency's mandatory Quality Assurance Management Plan will require the commitment of senior level management (Bureau Chiefs and Assistant Bureau Chiefs) to phase-in all aspects over an extended time period. Steps to implement the plan shall be identified, scheduled, implemented, and the progress shall be monitored in the Department's annual QA Report/ Work Plan. This work plan will be submitted to the Regional Quality Assurance Officer.

APPENDIX

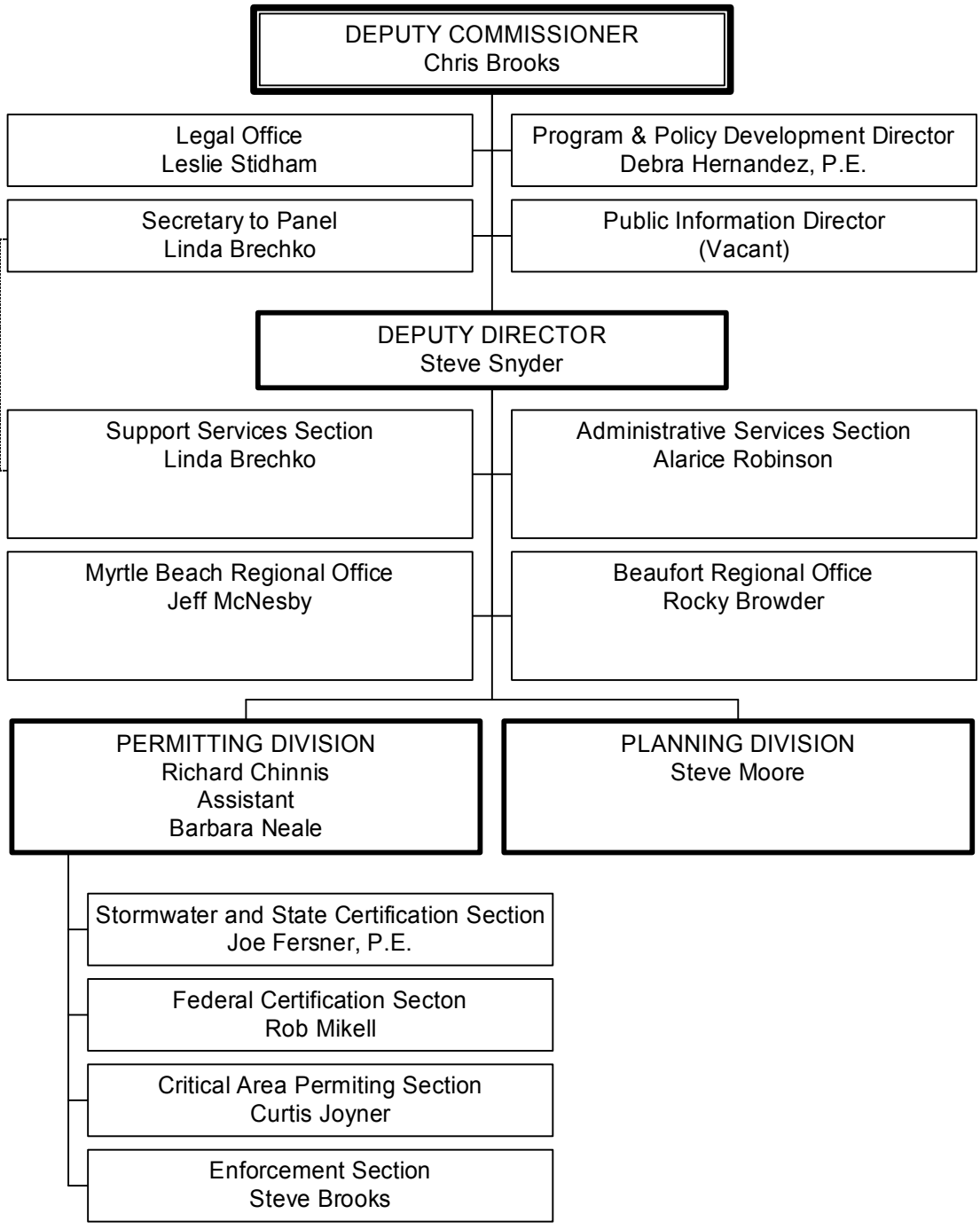
Organizational Charts

SCDHEC
Environmental Quality Control
Organizational Chart

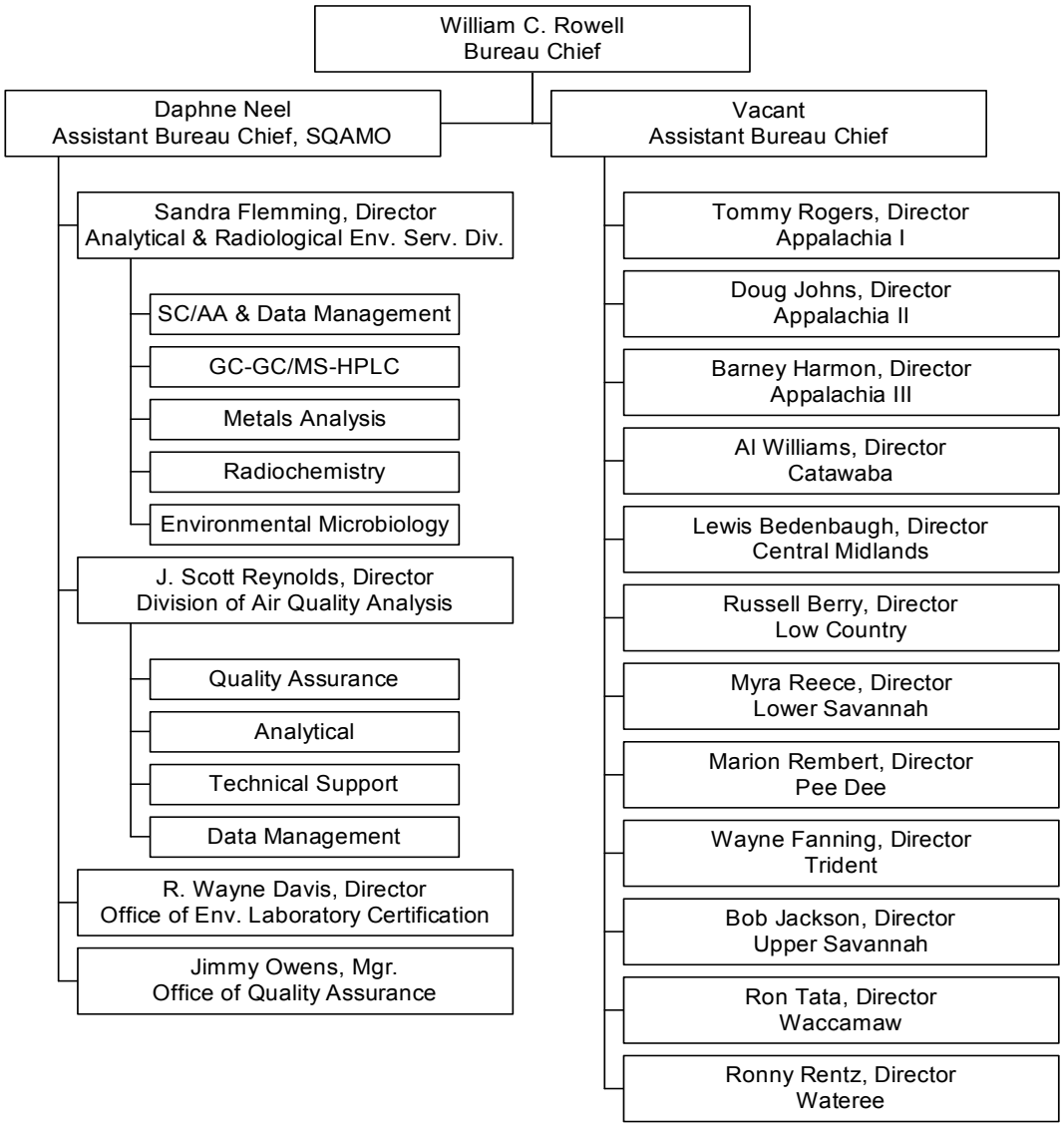


July 2003

Office of Ocean and Coastal Resource Management
S.C. Department of Health and Environmental Control

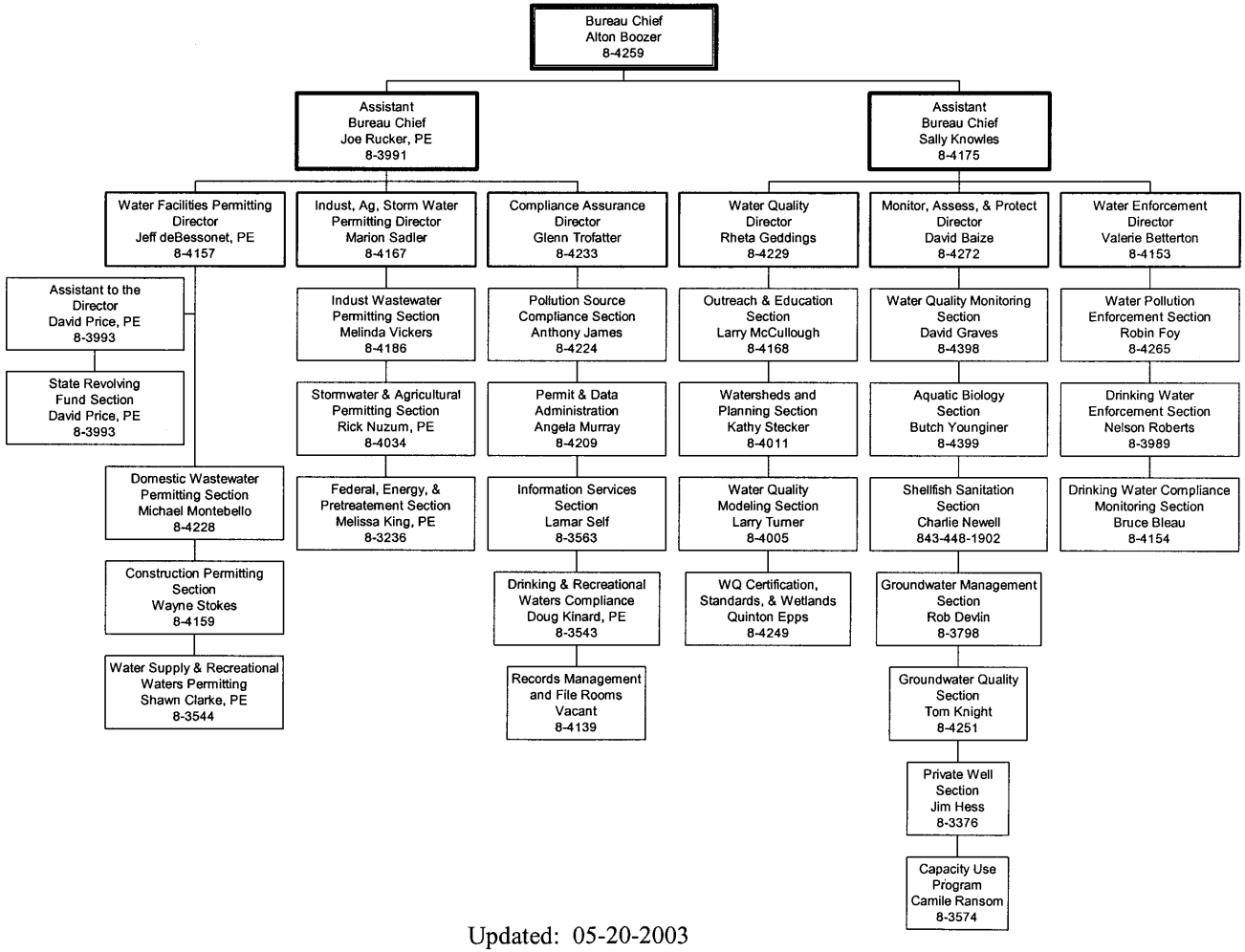


Bureau of Environmental Services/EQC Laboratories



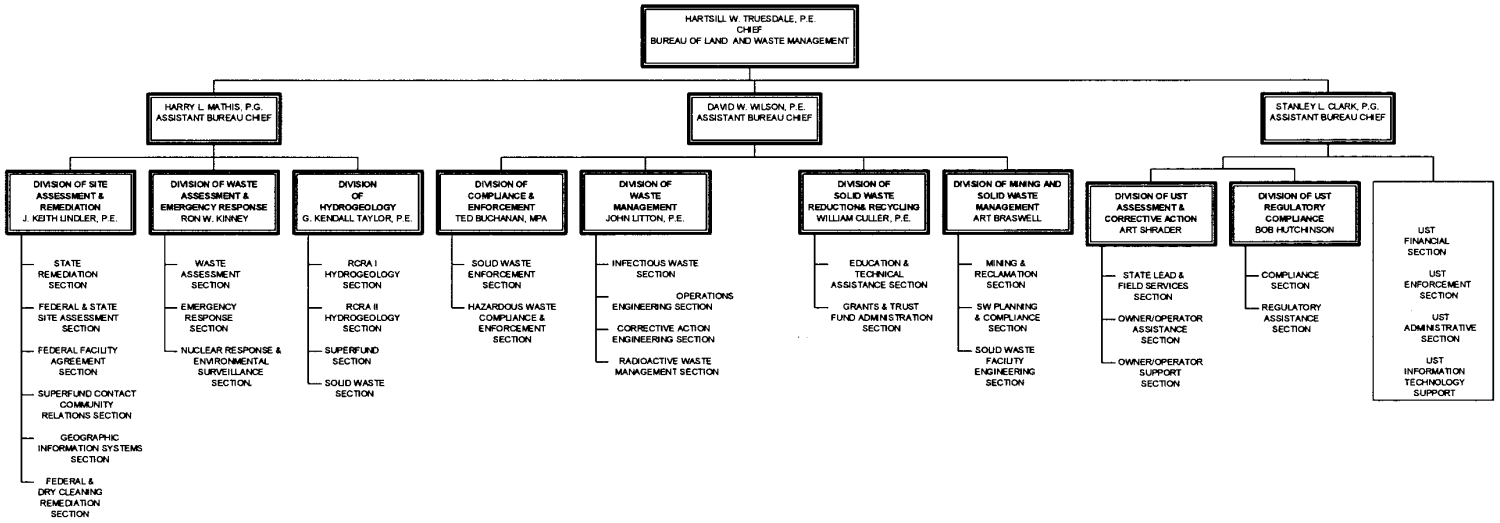
July 2003

Bureau of Water



Updated: 05-20-2003

BUREAU OF LAND AND WASTE MANAGEMENT

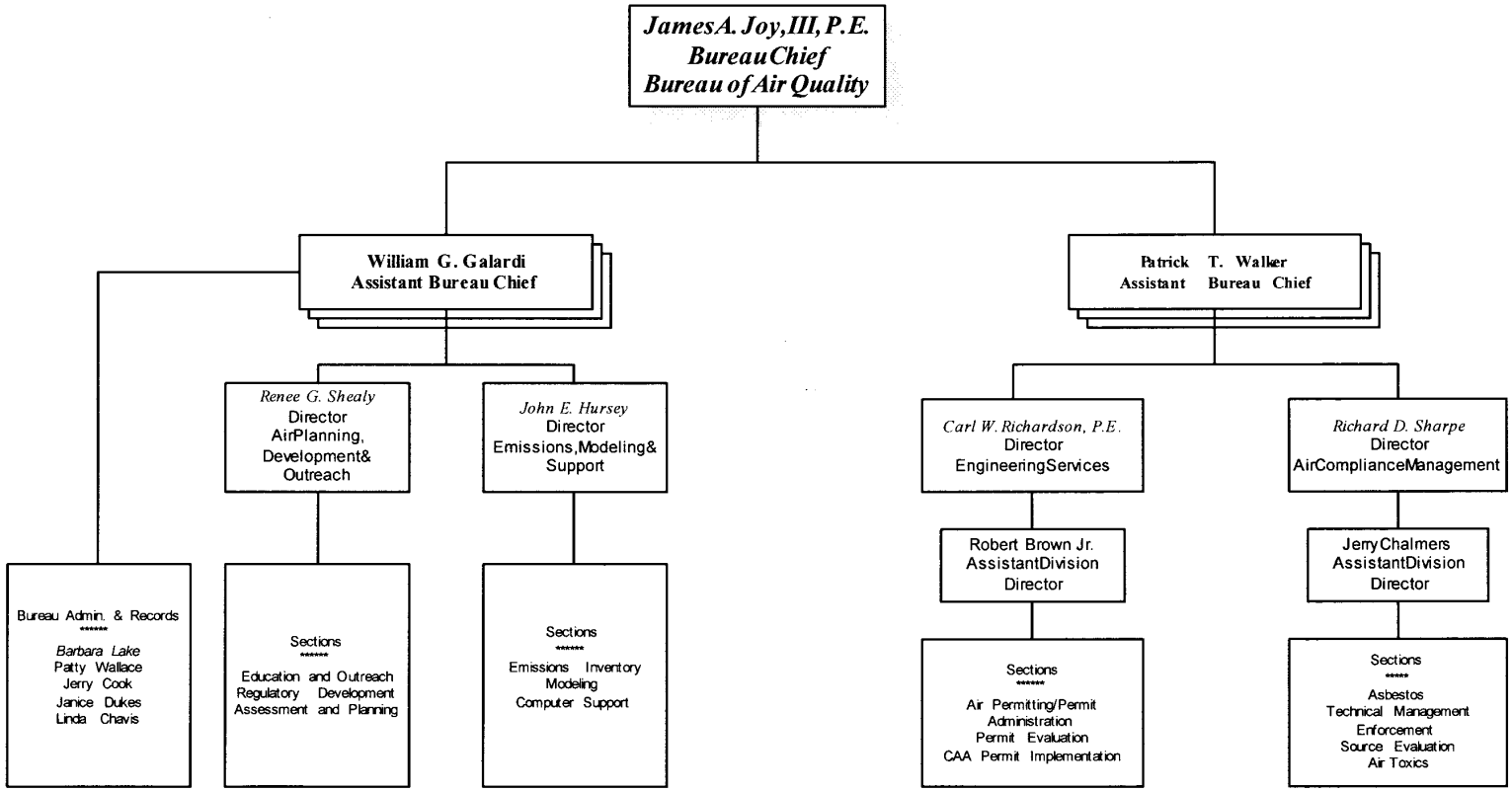


BUREAU OF LAND AND WASTE MANAGEMENT
SC Department Of Health And Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Main:	UST:
(803) 896-4000	(803) 896-6240
Fax: (803) 896-4001	Fax: (803) 896-6245
http://www.scdhec.net/lwm/	http://www.scdhec.net/ust/

BUREAU OF AIR QUALITY

803-898-4123
www.scdhec.net/baq/
July 14, 2003



D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Bureau of Environmental Services
Office of Quality Assurance
EQC Laboratories, 8231 Parklane Road, Columbia, South Carolina 29223
Office: (803) 896-0981 Fax: (803) 896-0980

Request for QA/QC Documentation

In compliance with SCDHEC's Quality Assurance Management Plan and QA Policy that there be sufficient QA activities conducted to demonstrate the validity, defensibility, and quality of data submitted for Departmental use, the following information should accompany any private laboratory's proposal and/or contract for work requested by the Department. This information conforms with EPA QA/R-5 Quality Assurance Project Plan requirements.

Contract Laboratory Name:
Laboratory Address:
Laboratory Contact: *Title:*
Phone/Fax/E-mail:
Project Name:

Please describe your laboratory's policies, protocols, and procedures as related/applicable to the following quality assurance/quality control topics. If an item is not practiced in your laboratory, please note as "N/A". Be as specific as possible for proper evaluation of your QA program. Examples of forms, worksheets, etc. used are encouraged.

1. Project/Task Description	**-Give and overview of the scope of work to be performed.**
2. Certifications	**–List any laboratory certifications held and the expiration date of each.**
3. Sample Handling and Custody	**– Describe procedures for within-laboratory chain-of-custody including sample identification, handling/storage protocols and documentation.**
4. Analytical Methods	**– Cite the analytical methods and reference for each.** Written SOPs must be attached or available for review.
5. Quality Control Procedures	– **Identify QC checks and frequency for each analysis, as well as associated acceptance criteria and corrective actions if QC fails. (Examples include blanks, check standards, duplicates, spikes, reference samples, etc.).**
6. Instrument Calibration and Frequency	**– Identify equipment needing calibration and the frequency for such calibration, including calibration records maintained.**
7. Calibration Standards	**– Identify any certified or national reference standards used. Document the traceability of lab standards used to calibrate each instrument.**
8. Assessments	**– Identify any internal and external assessments performed. (Examples are Performance Evaluation Study Samples, Data Quality Audits, Peer Review, etc). Identify individual(s) responsible for corrective actions.**
9. Data Review and Validation	**– State criteria for accepting, rejecting, and qualifying data.**
10. Data Management and User Reports	**- Document protocols used in data reduction, transfer, and storage. Describe the reporting format and how any limitations on data use will be conveyed.**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

Science and Ecosystem Support Division
980 College Station Road
Athens, Georgia 30605-2720

AUG 12 2003

4 SESD

Ms. Daphne Neel
Assistant Chief
Bureau of Environmental Services
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201-1708

Dear Ms. Neel:

Thank you for the Quality Management Plan (QMP) for the Department of Health and Environmental Control. The plan was submitted in response to the quality assurance condition placed by U.S. Environmental Protection Agency (EPA) Region 4 on the financial assistance agreements awarded to your Department. The QMP you provided meets the quality assurance requirements specified in 40 CFR Part 31.45, "Uniform Administrative Requirements for Grants", and the specifications in EPA Requirements for Quality Management Plans, (EPA QA/R–2), EPA/240/B-01/002, March 2001. The plan is approved for implementation.

Enclosed is your QMP which has been signed by EPA's Quality Assurance Manager, Gary Bennett, to indicate EPA Region 4 approval. This plan is approved for up to 5 years or until a major reorganization or change in quality assurance responsibilities occurs within your organization. Please contact Mr. Bennett at (706) 355-8551 if you have any questions or need additional information.

Sincerely,

Michael V. Peyton

Michael V. Peyton
Director

Enclosure

cc: Lewis Shaw, w/o enclosure